

NASA JPL
Data Validation Reports
LDC# 10006

Wet Chemistry

LDC

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: January 30, 2003
LDC Report Date: March 28, 2003
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level III
Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 03-1402

Sample Identification

DUPE-1-1Q03
EB-2-1/30/03
MW-20-1
MW-20-2
MW-20-3
MW-20-4
MW-20-5
MW-20-3MS
MW-20-3MSD

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

- U Indicates the compound or analyte was analyzed for but not detected at or above the stated limit.
- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
- P Indicates the finding is related to a protocol/contractual deviation.
- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

Instrument detection limits, interelement corrections and linear range analysis were performed at the required frequency with the following exceptions:

Analyte	Calibration	Date of Last Report	Report Frequency Requirement	Date of Analysis	Associated Samples	Flag	A or P
Perchlorate	ICAL	7/31/02	Every 6 months	2/3-2/10/03	All samples in SDG 03-1402	None	P

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples DUPE-1-1Q03 and MW-20-1 were identified as field duplicates. No contaminant concentrations were detected in any of the samples.

X. Field Blanks

Sample EB-2-1/30/03 was identified as an equipment blank. No contaminant concentrations were found in this blank.

NASA JPL**Wet Chemistry - Data Qualification Summary - SDG 03-1402**

SDG	Sample	Analyte	Flag	A or P	Reason
03-1402	DUPE-1-1 Q03 EB-2-1/30/03 MW-20-1 MW-20-2 MW-20-3 MW-20-4 MW-20-5	Perchlorate	None	P	Calibration

NASA JPL**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 03-1402**

No Sample Data Qualified in this SDG

Applied P & Ch Laboratory
Wet Analysis Results for Method 314.0

Client Name: GEOFON, Inc.
Project ID: JPL

Project No: 04-4428.10
Service ID: 31402

Anal. Method 314.0
Collected by:

Component Name: Perchlorate
CAS No:

Lab ID	Sample ID	Matrix	Coll. Date	Rcv Date	Anal. Date	Batch	Unit	RL	Result	Q
03-1402-1	DUPE-1-1Q03	Water	01/30/03	01/30/03	02/03/03	03W1345	µg/L	4	<4	U
03-1402-2	EB-2-1/30/03	Water	01/30/03	01/30/03	02/10/03	03W1424	µg/L	4	<4	U
03-1402-3	MW-20-1	Water	01/30/03	01/30/03	02/03/03	03W1345	µg/L	4	<4	U
03-1402-4	MW-20-2	Water	01/30/03	01/30/03	02/03/03	03W1345	µg/L	4	<4	U
03-1402-5	MW-20-3	Water	01/30/03	01/30/03	02/03/03	03W1345	µg/L	4	<4	U
03-1402-6	MW-20-4	Water	01/30/03	01/30/03	02/10/03	03W1424	µg/L	4	<4	U
03-1402-7	MW-20-5	Water	01/30/03	01/30/03	02/03/03	03W1345	µg/L	4	<4	U
03W1345-MB-01	03W1345-MB-01	Water	02/03/03	02/03/03	02/03/03	03W1345	µg/L	4	<4	U
03W1424-MB-01	03W1424-MB-01	Water	02/10/03	02/10/03	02/10/03	03W1424	µg/L	4	<4	U

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: Q - Qualifier.

Qualifier: U - Not Detected or less than MDL

B - Less than RL (PQL, EQL or CRDL), but greater than MDL.

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Applied P & Ch Laboratory
Wet Analysis Results for Method 7196

Client Name: GEOFON, Inc. Project No: 04-4428.10 Anal. Method 7196
 Project ID: JPL Service ID: 31402 Collected by:

Component Name: Chromium (VI)
 CAS No: 1333-82-0

Lab ID	Sample ID	Matrix	Coll. Date	Rcv Date	Anal. Date	Batch	Unit	RL	Result	Q
03-1402-1	DUPE-1-1Q03	Water	01/30/03	01/30/03	01/30/03	03W1308	mg/L	0.01	<0.01	U
03-1402-2	EB-2-1/30/03	Water	01/30/03	01/30/03	01/30/03	03W1308	mg/L	0.01	<0.01	U
03-1402-3	MW-20-1	Water	01/30/03	01/30/03	01/30/03	03W1308	mg/L	0.01	<0.01	U
03-1402-4	MW-20-2	Water	01/30/03	01/30/03	01/30/03	03W1308	mg/L	0.01	<0.01	U
03-1402-5	MW-20-3	Water	01/30/03	01/30/03	01/30/03	03W1308	mg/L	0.01	<0.01	U
03-1402-6	MW-20-4	Water	01/30/03	01/30/03	01/30/03	03W1308	mg/L	0.01	<0.01	U
03-1402-7	MW-20-5	Water	01/30/03	01/30/03	01/30/03	03W1308	mg/L	0.01	<0.01	U
03W1308-MB-01	03W1308-MB-01	Water	01/30/03	01/30/03	01/30/03	03W1308	mg/L	0.01	<0.01	U

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: Q - Qualifier.

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LDC #: 10006A6 **VALIDATION COMPLETENESS WORKSHEET**
 SDG #: 03-1402 Level III
 Laboratory: Applied P & Ch Laboratory

Date: 3-27-03
 Page: 1 of 1
 Reviewer: MG
 2nd Reviewer: MP

METHOD: Hexavalent chromium (EPA SW 846 Method 7196) Perchlorate (EPA Method 314.0)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 1-30-03
IIa.	Initial calibration	SW	
IIb.	Calibration verification	A	
III.	Blanks	A	
IVa.	Matrix Spike/(Matrix Spike) Duplicates	A	MW-4-1 MS/MSD (SDG: 03-1501)
IVb.	Laboratory control samples	A	LCS /LCSD
V.	Sample result verification	N	
VI.	Overall assessment of data	A	
VII.	Field duplicates	ND	D = 1+3
VIII.	Field blanks	ND	EB = 2

Note: A = Acceptable
 N = Not provided/applicable
 SW = See worksheet

ND = No compounds detected
 R = Rinsate
 FB = Field blank

D = Duplicate
 TB = Trip blank
 EB = Equipment blank

Validated Samples:

1	DUPE-1-1Q03	W	11		21		31	
2	EB-2-1/30/03		12		22		32	
3	MW-20-1		13		23		33	
4	MW-20-2		14		24		34	
5	MW-20-3		15		25		35	
6	MW-20-4		16		26		36	
7	MW-20-5		17		27		37	
8	MW-20-3MS		18		28		38	
9	MW-20-3MSD		19		29		39	
10	PBW		20		30		40	

Notes: _____

LDC #: 10006A6

SDG #: 03-1402

VALIDATION FINDINGS WORKSHEET

Sample Specific Analysis Reference

Page: 1 of 1

Reviewer: MG

2nd reviewer: MB

All circled methods are applicable to each sample.

[illegible]

Comments: _____

Page: 1 of 1
 Reviewer: MG
 2nd Reviewer: 644

VALIDATION FINDINGS WORKSHEET

LDC #: 10006A6
SDG #: 03-1402

METHOD: Inorganics, EPA Method see cover

Please see qualifications below for all questions answered "N". Not applicable questions are identified as "N/A".

Were all instruments calibrated daily, each set-up time, and were the proper number of standards used?	<u>Y</u>	<u>N</u>	<u>N/A</u>
Were all initial and continuing calibration verification percent recoveries (%R) within the control limits of 90-110%?	<u>Y</u>	<u>N</u>	<u>N/A</u>
Are all correlation coefficients ≥ 0.995 ?	<u>Y</u>	<u>N</u>	<u>N/A</u>

LEVEL IV/D ONLY:		
Were recalculated results acceptable?	See Level IV Initial and Continuing Calibration Recalculation Worksheet for recalculations.	Y N N/A
Was a balance check conducted prior to the TDS analysis?		Y N N/A
Was the titrant normality checked?		Y N N/A

[illegible]

Comments: _____

**Laboratory Data Consultants, Inc.
Data Validation Report**

Project/Site Name: NASA JPL
Collection Date: February 10, 2003
LDC Report Date: March 28, 2003
Matrix: Water
Parameters: Wet Chemistry
Validation Level: EPA Level III
Laboratory: Applied P & Ch Laboratory

Sample Delivery Group (SDG): 03-1534

Sample Identification

DUPE-3-1Q03
EB-7-2/10/03
MW-14-1
MW-14-2
MW-14-3
MW-14-4
MW-14-5
MW-14-2MS
MW-14-2MS

Introduction

This data review covers 9 water samples listed on the cover sheet including dilutions and reanalysis as applicable. The analyses were per EPA Method 314.0 for Perchlorate, and EPA SW 846 Method 7196 for Hexavalent Chromium.

The review follows a modified outline of the USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994) as there are no current guidelines for the methods stated above.

A table summarizing all data qualification is provided at the end of this report. Flags are classified as P (protocol) or A (advisory) to indicate whether the flag is due to a laboratory deviation from a specified protocol or is of technical advisory nature.

Blank results are summarized in Section III.

Field duplicates are summarized in Section IX.

Raw data were not reviewed for this SDG. The review was based on QC data.

The following are definitions of the data qualifiers:

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- J Indicates an estimated value.
- R Quality control indicates the data is not usable.
- N Presumptive evidence of presence of the constituent.
- UJ Indicates the compound or analyte was analyzed for but not detected. The sample detection limit is an estimated value.
- A Indicates the finding is based upon technical validation criteria.
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- None Indicates the data was not significantly impacted by the finding, therefore qualification was not required.

I. Technical Holding Times

All technical holding time requirements were met.

The chain-of-custodies were reviewed for documentation of cooler temperatures. All cooler temperatures met validation criteria.

II. Calibration

a. Initial Calibration

All criteria for the initial calibration of each method were met.

Instrument detection limits, interelement corrections and linear range analysis were performed at the required frequency with the following exceptions:

Analyte	Calibration	Date of Last Report	Report Frequency Requirement	Date of Analysis	Associated Samples	Flag	A or P
Perchlorate	ICAL	7/31/02	Every 6 months	2/13/03	All samples in SDG 03-1534	None	P

b. Calibration Verification

Calibration verification frequency and analysis criteria were met for each method when applicable.

III. Blanks

Method blanks were reviewed for each matrix as applicable. No contaminant concentrations were found in the method blanks.

IV. Matrix Spike/Matrix Spike Duplicates

Matrix spike (MS) and matrix spike duplicate (MSD) samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

V. Duplicates

Duplicate (DUP) sample analyses were reviewed for each matrix as applicable.

VI. Laboratory Control Samples

Laboratory control samples were reviewed for each matrix as applicable. Percent recoveries (%R) and relative percent differences (RPD) were within QC limits.

VII. Sample Result Verification

Raw data were not reviewed for this SDG.

VIII. Overall Assessment of Data

Data flags are summarized at the end of this report.

IX. Field Duplicates

Samples DUPE-3-1Q03 and MW-14-4 were identified as field duplicates. No contaminant concentrations were detected in any of the samples with the following exceptions:

Analyte	Concentration (ug/L)		RPD
	DUPE-3-1Q03	MW-14-4	
Perchlorate	2.2	1.8	20

X. Field Blanks

Sample EB-7-2/10/03 was identified as an equipment blank. No contaminant concentrations were found in this blank.

NASA JPL**Wet Chemistry - Data Qualification Summary - SDG 03-1534**

SDG	Sample	Analyte	Flag	A or P	Reason
03-1534	DUPE-3-1 Q03 EB-7-2/10/03 MW-14-1 MW-14-2 MW-14-3 MW-14-4 MW-14-5	Perchlorate	None	P	Calibration

NASA JPL**Wet Chemistry - Laboratory Blank Data Qualification Summary - SDG 03-1534**

No Sample Data Qualified in this SDG

C

Applied P & Ch Laboratory
Wet Analysis Results for Method 7196

Client Name: GEOFON, Inc.
Project ID: JPL GW MON-1Q03.

Project No: 04-4428.10
Service ID: 31534

Anal. Method 7196
Collected by:

Component Name: Chromium (VI)
CAS No: 1333-82-0

Lab ID	Sample ID	Matrix	Coll. Date	Rcv Date	Anal. Date	Batch	Unit	RL	Result	Q
03-1534-1	DUPE-3-1Q03	Water	02/10/03	02/10/03	02/10/03	03W1428	mg/L	0.01	<0.01	U
03-1534-2	EB-7-2/10/03	Water	02/10/03	02/10/03	02/10/03	03W1428	mg/L	0.01	<0.01	U
03-1534-3	MW-14-1	Water	02/10/03	02/10/03	02/10/03	03W1428	mg/L	0.01	<0.01	U
03-1534-4	MW-14-2	Water	02/10/03	02/10/03	02/10/03	03W1428	mg/L	0.01	<0.01	U
03-1534-5	MW-14-3	Water	02/10/03	02/10/03	02/10/03	03W1428	mg/L	0.01	<0.01	U
03-1534-6	MW-14-4	Water	02/10/03	02/10/03	02/10/03	03W1428	mg/L	0.01	<0.01	U
03-1534-7	MW-14-5	Water	02/10/03	02/10/03	02/10/03	03W1428	mg/L	0.01	<0.01	U
03W1428-MB-01	03W1428-MB-01	Water	02/10/03	02/10/03	02/10/03	03W1428	mg/L	0.01	<0.01	U

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: Q - Qualifier.

Qualifier: U - Not Detected or less than MDL

B - Less than RL (PQL, EQL or CRDL), but greater than MDL.

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Applied P & Ch Laboratory
Wet Analysis Results for Method 314.0

Client Name: GEOFON, Inc.
Project ID: JPL. GW MON-1Q03.

Project No: 04-4428.10
Service ID: 31534

Anal. Method 314.0
Collected by:

Component Name: Perchlorate

CAS No:

Lab ID	Sample ID	Matrix	Coll. Date	Rcv Date	Anal. Date	Batch	Unit	RL	Result	Q
03-1534-1	DUPE-3-1Q03	Water	02/10/03	02/10/03	02/13/03	03W1495	µg/L	4	2.2	B
03-1534-2	EB-7-2/10/03	Water	02/10/03	02/10/03	02/13/03	03W1495	µg/L	4	<4	U
03-1534-3	MW-14-1	Water	02/10/03	02/10/03	02/13/03	03W1495	µg/L	4	1.9	B
03-1534-4	MW-14-2	Water	02/10/03	02/10/03	02/13/03	03W1495	µg/L	4	2.6	B
03-1534-5	MW-14-3	Water	02/10/03	02/10/03	02/13/03	03W1495	µg/L	4	2.9	B
03-1534-6	MW-14-4	Water	02/10/03	02/10/03	02/13/03	03W1495	µg/L	4	1.8	B
03-1534-7	MW-14-5	Water	02/10/03	02/10/03	02/13/03	03W1495	µg/L	4	<4	U
03W1495-MB-01	03W1495-MB-01	Water	02/13/03	02/13/03	02/13/03	03W1495	µg/L	4	<4	U

Not Detected is shown as PQL, with dilution and moisture corrected if applicable.

Note: Q - Qualifier.

Qualifier: U - Not Detected or less than MDL

B - Less than RL (PQL, EQL or CRDL), but greater than MDL.

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LDC #: 10006C6 **VALIDATION COMPLETENESS WORKSHEET**
SDG #: 03-1534 Level III
Laboratory: Applied P & Ch Laboratory

Date: 3-27-03
Page: 1 of 1
Reviewer: MG
2nd Reviewer: JMY

METHOD: Hexavalent chromium (EPA SW 846 Method 7196) Perchlorate (EPA Method 314.0)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

	Validation Area		Comments
I.	Technical holding times	A	Sampling dates: 2-10-03
IIa.	Initial calibration	SW	
IIb.	Calibration verification	A	
III.	Blanks	A	
IVa.	Matrix Spike/(Matrix Spike) Duplicates	A	
IVb.	Laboratory control samples	A	LCS/LCSD
V.	Sample result verification	N	
VI.	Overall assessment of data	A	
VII.	Field duplicates	SW	D = 1 + 6
VIII.	Field blanks	ND	EB = 2

Note: A = Acceptable
N = Not provided/applicable
SW = See worksheet

ND = No compounds detected
R = Rinsate
FB = Field blank

D = Duplicate
TB = Trip blank
EB = Equipment blank

Validated Samples:

1	DUPE-3-1Q03	W	11		21		31	
2	EB-7-2/10/03		12		22		32	
3	MW-14-1		13		23		33	
4	MW-14-2		14		24		34	
5	MW-14-3		15		25		35	
6	MW-14-4		16		26		36	
7	MW-14-5		17		27		37	
8	MW-14-2MS		18		28		38	
9	MW-14-2MSD	V	19		29		39	
10	PBW		20		30		40	

Notes: _____

LDC #: 1000606

SDG #: 03-1534

VALIDATION FINDINGS WORKSHEET

Field Duplicates

Page: 1 of 1

Reviewer: MG

2nd reviewer: MV

METHOD: Inorganics, Method see cover☒ N N/A

Were field duplicate pairs identified in this SDG?

☒ N N/A

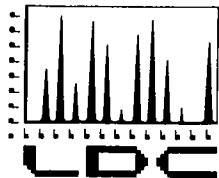
Were target analytes detected in the field duplicate pairs?

Analyte	Concentration ($\mu\text{g/L}$)		RPD (Limit)	Difference (Limit)	Qualifier
	1	6			
ClO_4	2.2	1.8	20		

Analyte	Concentration ()		RPD (Limit)	Difference (Limit)	Qualifier

Analyte	Concentration ()		RPD (Limit)	Difference (Limit)	Qualifier

Analyte	Concentration ()		RPD (Limit)	Difference (Limit)	Qualifier



LABORATORY DATA CONSULTANTS, INC.

7750 El Camino Real, Suite 2L Carlsbad, CA 92009 Phone: 760/634-0437 Fax: 760/634-0439

Geofon, Inc.
22632 Golden Springs Drive, Suite 270
Diamond Bar, CA 91765
ATTN: Mr. Leo Williamson

April 2, 2003

SUBJECT: NASA JPL, DO #01, Data Validation

Dear Mr. Williamson,

Enclosed are the final validation reports for the fractions listed below. These SDGs were received on March 24, 2003. Attachment 1 is a summary of the samples that were reviewed for each analysis.

LDC Project # 10025:

<u>SDG #</u>	<u>Fraction</u>
03-1651, 03-1684, 0303045	Volatiles (TO-14A), Volatiles (524.2), Wet Chemistry

The data validation was performed under EPA Level III guidelines. The analyses were validated using the following documents, as applicable to each method:

- USEPA, Contract Laboratory Program National Functional Guidelines for Organic Data Review, October 1999
- USEPA, Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, February 1994
- EPA SW 846, Third Edition, Test Methods for Evaluating Solid Waste, update 1, July 1992; update IIA, August 1993; update II, September 1994; update IIB, January 1995; update III, December 1996

Please feel free to contact us if you have any questions.

Sincerely,

Erlinda T. Rauto
Operations Manager/Senior Chemist

LDC #10025 (Geofon, Inc.-Diamond Bar / NASA Jet Propulsion Laboratory, DO#001)

[illegible]